

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION

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July 12, 1984

Mr. Ken Kazarian, Vice President
BKK Corporation
P.O. Box 3038
Torrance, CA 90510

SUBJECT: "Plan for Detailed Investigation of the BKK Disposal Facility and the Affected Surrounding Area, West Covina, California", dated May 21, 1984

Dear Mr. Kazarian:

The Los Angeles Regional Water Quality Control Board (LARWQCB) and the Toxic Substances Control Division of the State Department of Health Services (DOHS) have reviewed the subject Plan in conjunction with several other regulatory agencies.

We find the Plan lacks sufficient detail to describe the required tasks to accomplish the Plan objectives. Time schedules for specific task accomplishments are also largely lacking. The Plan also omits some major elements vital to the assessment of the site and its surrounding area. The Plan must therefore be substantially revised in both format and content.

Some of the major areas of concern not adequately addressed in the Plan are:

1. Assessments of the extent of off-site contamination and the necessary remedial measures.
2. Assessment of air quality impacts and a plan for an air quality control program.
3. The Liner and Barrier Study Plan submitted is identical to the one already found inadequate by DOHS staff.
4. The Subsurface Migration Plan assumes only the two routes or subsurface flow previously identified. The Plan must also consider other potential routes. The proposed pumping trough concept initially locates the liquid extraction wells utilizing symmetry rather than geologic considerations.
5. The Management Plan for Disposal of Leachate and Other Collected Site Waters consists of only a brief discussion of treatment concepts. No detailed discussion of proposed treatment alter-

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Mr. Ken Kazarian
BKK Corporation

natives are included. This Plan must be restructured to include feasibility studies of various treatment facilities and defined work tasks and time schedules.

6. Surface water hydrology for management of all run-off, run-on, and springs.

In coordination with the BKK Interagency Steering Committee, we have prepared the attached Draft Workplan for your review. This Workplan delineates the objectives of the investigative and remedial work to be accomplished and provides an outline of specific tasks and time schedules.

You are requested to review the attached Draft Workplan and the comments contained in this letter and to revise and expand your Plan accordingly. You are to submit a revised Plan for agency review within 30 days of receipt of this letter.

We are available to meet with you to discuss any of the issues discussed in this letter, as well as the Draft Workplan. Please contact Nestor Acedera (DOHS) at (213) 620-2380 or Hank Yacoub (LARWQCB) at (213) 620-4397 if there are questions.

Robert P. Ghirelli

ROBERT P. GHIRELLI, D.Env.
Executive Officer
Los Angeles Regional Water
Quality Control Board

Angelo Bellomo

ANGELO BELLOMO
Chief, Southern California Section
Department of Health Services,
Toxic Substances Control Division

cc: See attached mailing list.

BKK Corporation

cc: Regional Board Members

State Water Resources Control Board, Division
of Technical Services, ATTN: Ed Anton

State Water Resources Control Board, Division
of Technical Services, ATTN: Jim Parsons

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of Technical Services, ATTN: Fred Lercari

State Water Resources Control Board, Office of
Chief Counsel, ATTN: Kathy Keber

California Waste Management Board,
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Environmental Protection Agency, Region 9, Toxics
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South Coast Air Quality Management District,
ATTN: Ed Camarena

Los Angeles County Department of Health Services,
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City of West Covina, ATTN: Mike Miller

DRAFT

BKK LANDFILL

product (w/ interpretation
of data)

SITE ASSESSMENT AND MITIGATION WORKPLAN OUTLINE

GOALS (not prioritized)

- A. Completion of the hydrogeologic characterization of the entire site.
- B. Development and implementation of appropriate remedial measures to prevent off-site liquid and gas migration.
- C. Assessment of off-site landfill gas migration and ground water contamination and implementation of remedial measures, as warranted.

WORKPLAN COMPONENTS, TASKS, OBJECTIVES, AND PRODUCTS

- million will
rearrange

I. Site Characterization

This workplan component addresses the detailed hydrogeologic characterization of the entire site. The containment capability of the currently designated Class I disposal area will be assessed, as well as all potential off-site contamination pathways in the previously used Class I and II portions. At a minimum, this component will consist of the following tasks:

A. Define site hydrogeology

- 1. Define site geology to the extent necessary to evaluate the capability of the formations to contain the waste.
 - a. Geology under the waste (a.k.a. "liner" studies)
 - 1. Conduct exploratory borings through the landfill (both active and inactive portions), including permeability testing. Determine the amount of liquid within the landfill, and within the underlying geologic formations.
 - 2. Define and map geology underlying both the active and inactive portions of the landfill.
 - 3. Determine the extent to which the geologic formations under the waste are chemically and physically resistant to all those liquids which are reasonably expected to come into contact with those formations.
 - a. Laboratory testing (permeability testing if unfractured units are found)
 - b. In-situ testing to determine the permeability and attenuation (pump tests to determine formation permeabilities; packer tests where necessary)

Products : Geologic maps and cross-sections *scale 1:200*
Lab analyses and permeability test results
Boring logs

Report Submittal Date : 9/1/84 *

b. Geology of the rest of the site

1. Conduct continuous core drilling along southern border of site.
2. Drill additional coreholes, as warranted by site findings.
3. Define the permeability of all subsurface materials encountered to both gas and liquids. Determine effects of leachate on permeability values in the lab or assume a worst case in design of remedial action.
4. Conduct additional subsurface investigations as warranted by site findings (trenching, geophysical surveys, etc.)

Products : Updated geologic maps - *scale 1:200*
Cross-sections
Test results
Corehole logs

Report Submittal Date : 8/1/84

2. Define site hydrology to the extent necessary to design containment structures.

a. Subsurface hydrology

1. Determine water levels using all wells, piezometers, and coreholes.
2. Geophysics
3. Packer tests
4. Aquifer and well tests

b. Surface hydrology

1. Quantify (on an average annual basis) all run-off, run-on, ponds, and springs
2. Map all run-off, run-on, ponds, and springs

Products : Water table/piezometric surface map with flow paths for entire site.
Map surface hydrology

Report Submittal Date : 8/1/84

[*Copies of all products shall be submitted to EPA, DOHS, RWQCB and the SCAQMD
data w/ interpretation]

3. Define hydrogeology of all areas of potential off-site¹ leachate migration to the extent necessary to design remedial measures.

a. Barrier 1 and area downgradient

1. Construct additional monitoring wells and piezometers as required by site findings.
2. Conduct a series of aquifer pumping tests. Aquifer tests should include at least one pumping well and three observation points within the zone of influence. Tests should be conducted for at least 24 to 48 hours or for a sufficient length of time to define boundary conditions.
3. Perform study of embankment and geology beneath Barrier and downgradient of the Barrier.
4. Drill sufficient coreholes to define the nature and extent of all shear zones and other significant geologic structures, the vertical and horizontal extent of the aquifer, and the extent of the flow zones. Begin with the proposed coreholes to define fault zone and include sufficient coreholes to define area hydrogeology.
5. Geophysics, as required by site findings.
6. Conduct pumping tests of Barrier 1 to determine the amounts of liquid which are able to pass through, under, and around the Barrier under all conditions which are reasonably expected to exist at the landfill.

Products : Detailed cross-section and water table map
Flow rate and direction
Hydraulic gradient
Transmissivity of aquifer
Thickness and width of aquifer
Map of significant geologic structures
Barrier pumping test data and results

1:50

Report Submittal Date : ~~8/1/84~~ 8/10/84

b. Barrier 2 and surrounding area

1. Install a sufficient numbers or wells/piezometers to define aquifer boundary conditions. At a minimum, at least 3 wells/piezometers must be installed, in addition to those in place on July 10, 1984. Wells/piezometers must be located within the projected cone of depression. Projections must be based on well tests and transmissivity estimates. The pumping well must be screened throughout the vertical extent

¹ Throughout this document, off-site is defined as outside of the 583 acres of real property included in the legal description incorporated as Attachment I to the EPA Administrative Order on Consent dated April 27, 1984

of saturation. The wells/piezometers must also be screened in the uppermost aquifer such that all saturated zones are monitored. In addition, the water levels of wells in the vicinity of Barrier 2 must be monitored during the pumping test to verify the limit of drawdown.

2. Conduct a series of aquifer pumping tests. Aquifer tests should include at least one pumping well and three observation points within the zone of influence. Tests should be conducted for at least 24 to 48 hours or sufficient length of time to define boundary conditions.
3. Perform study of barrier and underlying geology.
 - a. Coring, as required by site findings.
 - b. Geophysics, as required by site findings.
4. Conduct pumping tests at Barrier 2 to determine the amounts of liquid which are able to pass through, under, and around the Barrier under all conditions which are reasonably expected to exist at the landfill.

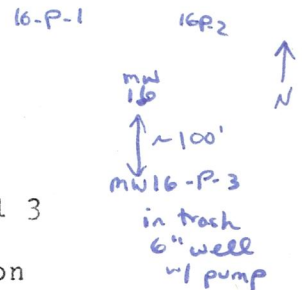
Products : Detailed cross-sections and water table map
Flow rate and direction
Thickness and width of aquifer
Hydraulic gradient
Map of significant geologic structures
Barrier pumping test data and results

1:50

Report Submittal Date : 8/15/84

c. MW 16 area

1. Install sufficient monitoring wells and piezometers to define aquifer boundary conditions. At a minimum, install 3 wells/piezometers at radii of approximately 100-500 feet from MW 16. The exact distance must be determined based on predictions of the lateral extent of the cone of depression. The pumping well must be screened throughout the vertical extent of saturation. The wells/piezometers must also be screened in the uppermost aquifer such that all saturated zones are monitored.
2. Conduct well and aquifer tests. Aquifer tests should include at least one pumping well and three observation points within the zone of influence. Tests should be conducted for at least 24 to 48 hours or sufficient length of time to define boundary conditions.
3. Define details of subsurface geology
 - a. Coring, as required by site findings.
 - b. Geophysics, as required by site findings.



Products : Detailed cross-sections and water table map
Flow rate and direction
Transmissivity of aquifer
Thickness and width of aquifer
Hydraulic gradient
Well and aquifer test data and results

Report Submittal Date : 8/31/84 - added 30 days

- d. All other areas where contamination is detected

Products : Flow rate and direction
Transmissivity of aquifer
Thickness and width of aquifer
Hydraulic gradient

1:50

Report Submittal Date :

B. Ground Water Monitoring and Assessment Program

1. Install a ground water monitoring system capable of determining the facility's impact on the quality of ground water in the uppermost aquifer underlying and adjacent to the facility.

- a. Locate and install sufficient upgradient wells to monitor background ground water quality. (Locate one well near the microwave relay station). The location of wells must consider the differences in the water chemistry of the different aquifers.

Report Submittal Date : 8/1/84 (completion date)

- b. In the event that no saturated zone or aquifer can be located which is upgradient from the facility and suitable to monitor for background quality, install alternative wells which shall be designed to define background ground water quality at the facility or as near to the facility as practicable.

Report Submittal Date : 8/15/84 (completion date)

- c. Drill additional monitoring wells around the perimeter of the hazardous waste management area (140 acres previously designated as the Class I area by the RWQCB) at 400' intervals or less as required by site findings. The number and location of monitoring wells must be sufficient to monitor each aquifer, saturated zone or location where vertical or lateral movement of hazardous waste off-site may occur.

Products : Well construction diagrams
Well location map with ground water surface contours to verify upgradient and downgradient well locations
Well logs for all wells

Report Submittal Date : 9/1/84 (completion date)

- d. Implement a ground water quality assessment program to determine the nature, concentration, rate, and extent (vertical and horizontal) of contamination¹ on-site. In all areas of contamination beyond the hazardous waste management unit, drill sufficient wells to determine the extent of contaminant migration in all directions.

Begin by installing wells along the direction of flow at projected six month travel intervals, or closer if appropriate based on site findings. If travel time is unknown, estimates shall be made based on known data. Continue to install wells along the flow lines until the extent of the plume on-site is determined. No longer than 2 weeks shall elapse between the time each well is drilled. At each point where the contamination extends to the property boundary, proceed to an assessment of off-site contamination (Component II.3 and 4).

Products : Plume maps showing extent of plume migration

Report Submittal Date : 9/1/84 and monthly thereafter

- e. Prepare a sampling plan which, at a minimum, meets the requirements of the current waste discharge requirements and is sufficient to determine the nature and concentration of all contaminants. At a minimum, in order to determine the presence of contamination, all parameters in Appendix I must be analyzed for in wells immediately upon completion and at least quarterly thereafter.

Products : Sampling plan

Report Submittal Date : 8/15/84

- f. Conduct sampling according to the sampling plan. All analysis must be done to detection limits contained in SW-846.

Products : Sampling results and statistical analyses as required in 40 CFR 265.92/ISD Section V at a minimum
Isoconcentration maps for characteristic constituents

Report Submittal Date : monthly

- g. Aquifer tests to determine rate and direction of contaminant flow.

Products : Updated water table maps
Aquifer test data and interpretation

Report Submittal Date : monthly

¹ see Appendix I for a definition of contamination

C. Landfill Gas Transport Assessment Program

substitute 8/3 court order
attachment 1
plus time frame
for imp. (see H. Jones)

1. Evaluate the effectiveness of the existing gas collection and control system to fully capture all landfill gases.
- a. Install on-site landfill gas probes.
2. Monitor and evaluate landfill emissions.
3. Assess the impacts of landfill gas transport not captured by the gas collection system on water and air quality.

Products : Final report with map showing nature, concentration, and extent of gas migration.
Calculations for collection efficiency
Surface measurements of methane on a grid system

Report Submittal Date : 8/25/84

II. Assessment of Off-Site Contamination

This component of the workplan is designed to identify the extent of off-site liquid and gas migration. The significance of any off-site contamination will be evaluated, with emphasis placed on impacts to public health and safety. The following tasks are required for this component:

1. Drill and sample off-site ground water monitoring wells on flow lines from OW1, MW16, MW21, and MW17. If flow lines or transmissivities are not known, estimates must be used based on standard textbooks and regional maps.

To be completed by : 8/1/84

2. If contamination is detected at any well (based on the definition in Appendix I), within 2 weeks, drill and sample additional wells along the flow lines at the next projected six month travel interval, or less if required by site findings.

To be completed by : 8/15/84

3. Continue drilling and sampling wells at 2 week intervals, or less, until the outermost extent of contamination has been determined.

Report Submittal Date : 9/1/84 and 2 week intervals thereafter

4. Upon determining the outermost extent of contamination, determine the lateral extent of the plume(s) by drilling wells 400' or less in each direction perpendicular to the flow line until the edge of the plume is determined.

~~5. Install off-site landfill gas probes.~~

To be completed by : 8/1/84

→ 6. Characterize off-site hydrogeology within 3-mile radius from site to the extent of all water supply wells

6. Conduct water quality surveys of supply wells in potentially affected area (continuous) and sample all wells currently in use.

To be completed by : 8/1/84

7. Conduct health effects studies of area population, as required.

Products : Plume maps showing nature, rate, and extent of off-site contamination.

Report Submittal Date : Dates to be determined

III. Remedial Measures Program

This component will be designed to prevent further off-site migration of gas and liquid contamination, as well as to control, mitigate, and remedy the effects of any off-site contamination found. Although the site characterization and off-site assessment components of the workplan must be completed before a comprehensive remedial program can be designed, specific remedial measures can be implemented sooner as needed. These tasks, at a minimum, shall include:

A. Prevention of further off-site migration

incorporate remedial measures from cont order

1. Upgrading of existing gas collection and control system (with initial emphasis on southeast sector of site), sufficiently to capture all landfill gases produced. At a minimum, tasks should include:

2 to a std set by DPHS

- a. Install ~~of~~ deep gas collection wells, as required by site findings.

To be completed by : 9/1/84

- b. Monitor all flares to quantify destruction level of all contaminants.

Starting date : 8/15/84

- c. Convert existing condensate sumps to a collection system which prevents escape of all condensate. Collect and manage condensate as a hazardous waste.

Products : Periodic monitoring results of flares
Design of revised gas collection system
As-built drawings of condensate collection system

new

Report Submittal Date : 8/1/84

2. Development and implementation of leachate control systems (with initial emphasis on extraction of leachate at the southeast sector and at Barriers 1 and 2).

Products : Description/designs of leachate control systems

Report Submittal Date : 8/15/84 southeast *other areas*

3. Management of extracted liquids and condensate.

a. Short-term management plan

To be completed by : ~~7/15/84~~

b. Feasibility study for treatment of extracted liquid

1. Determine the amount of extracted liquid likely to be generated.

2. Characterize all types of leachate likely to be produced.

3. Define treatment methods.

To be completed by : ~~8/1/84~~

c. Implement treatment of extracted liquids.

Products : Short-term management plan
← Feasibility Study

Report Submittal Date : 10/1/84

4. Run-off controls

a. Immediate capture and on-site containment of surface water run-off

To be completed by : ~~7/15/84~~

b. Long-term coordination with treatment system for extracted liquids

Products :

To be completed by : 10/1/84

5. Improve cover in unused portions of the landfill sufficient to prevent the escape of landfill gases.

Products :

To be completed by : 9/1/84

B. Off-site Remedial Measures (as required)

Report Submittal Date : Dates to be determined

APPENDIX

For purpose of assessing the nature and extent of contamination within and surrounding the BKK Landfill, contamination is defined as the presence of any of the following substances:

trichloroethylene
perchloroethylene
PCB ?
benzene
vinyl chloride
carbon tetrachloride
endrin
lindane
methoxychlor
toxaphene
2,4 - D
2,4,5 - T (silvex)
1,1 dichloroethylene
Trans-1,2 dichloroethylene
1,1 dichloroethane
methylene chloride
1,2 dichloroethane
toluene
1,1,2 trichloroethane
chlorobenzene
Bis(2-ethylhexyl)phthalate
chloroethane
ethyl benzene
chloroform

RCRA
pest.

appear on
26 % of
analyses of
wells on-site

This list may be amended upon the detection of other contaminants.

background